Ultimate Normalization Cheat Sheet (0NF → 3NF)

Normal Form	Key Rule / Goal	What to Check	How to Fix / Action	Example	Common Mistakes / Exam Tip
0NF	Raw data, unstructured	Repeating groups, multi-valued attributes, no PK	Identify repeating groups; note PK if possible	`StudentID	Name
1NF	Atomic values, unique rows	Each cell has single value; table has PK	Split repeating groups into multiple rows; assign PK	`StudentID	Course` → (1, Math), (1, Physics)
2NF	Remove partial dependency	Composite PK exists? Non-PK attribute depends on part of PK?	Move attributes depending only on part of PK into new table	Table: `StudentID, CourseID → Grade, CourseName` → Split: `Courses: CourseID, CourseName`; `StudentCourses: StudentID, CourseID, Grade`	Ignoring partial dependencies; not splitting tables correctly
3NF	Remove transitive dependency	Non-PK attribute depends on another non-PK attribute	Move transitive dependencies to new table	Table: `StudentID, DeptID → StudentName, DeptName` → Split: `Students: StudentID, StudentName, DeptID`; `Departments:`	Forgetting transitive dependency; not showing FDs

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				`DeptID, DeptName`	
Functional Dependencies (FDs)	Shows relationships	Check which attribute depends on which	Always write in exams: `A → B`	`CourseID → CourseName`	Not showing FDs → lose marks
Exam Shortcut	Fast application	0 → 1NF → 2NF → 3NF	1. Remove repeating groups → 1NF2. Remove partial dependencies → 2NF3. Remove transitive dependencies → 3NF	Any table	Use FDs, highlight PK, label new tables clearly
Memory Trick	Easy recall	1NF → 2NF → 3NF	“Repeat → Partial → Transitive”	—	Helps avoid missing steps

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Tips to Score Full Marks

1. Always **show FDs** in every step.
2. Clearly **underline PK** in tables.
3. **Label new tables** after splitting.
4. **Write step-by-step reasoning**: 1NF → 2NF → 3NF.
5. Check **composite PKs** carefully for 2NF.
6. Check **non-PK dependencies** for 3NF.

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